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A Note on Color

A NOTE ON COLOR
FOR
TEACHERS OF ELEMENTARY SCHOOLS

BY
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To all teachers who, while seeking out color ways, are teaching their pupils to look up at the pale tints of the sky, down at the dark shades of earth and with level glance at the gorgeous color of leaf and flower and fruit.

In the morning when I was walking out
I saw a number of people sitting on the
benches in the park. Some of them
were talking to each other and some
were looking at the flowers.

INTRODUCTION.

When any subject like color is placed in the public schools, methods of extreme simplicity and breadth are necessary, because classes in elementary schools are large and also because many teachers will doubtless find the subject an unfamiliar one.

It is impossible to form a clear conception of what we seek to express in any subject without some definite standard to which we may refer the difficulties and doubts of the subject. In any branch of science the *relations* of objects are its most important phase. So in this science we must consider the relations of colors, and as colors

more strongly react upon each other than other mediums, the study of their mutual effects and relations becomes imperative.

Few of the most advanced teachers have studied the logical and scientific development of the color sense in either themselves or the children under their care, yet every teacher recognises the necessity of having some definite basic principles which can be used with facility, as the principles of arithmetic or of music are applied in those studies.

The treatment of color by logical methods will in nearly all cases secure harmonious and pleasing results. In fact the introduction of color study in our schools is one very important door opened to the conscious study of beauty and its harmonious development. When we reflect

that one chief thing which makes life worth living is the revelation of truth and beauty which comes to us, we begin to realize the influence which this subject is destined to have upon our children. For in teaching them to look for beauty, and to make it in their daily surroundings we are directly adding to the sum of their happiness, and perhaps even increasing their love of home and country.

C. W. VAN HELDEN.

Philadelphia.

A Note on Color.

DEVELOP A MENTAL IMAGE OF COLOR.

Color in the elementary schools has proved a subject of intense interest to both teacher and pupil. The faithful teacher, seeing the influence and charm which attach to the handling of colors by her pupils, will recognize therein one of the most powerful nature forces which she is trying to reach and control. To such a teacher the question is not, How can I shirk this duty? but, How can I prepare myself to do it? A few suggestions in response to such a query are here given.

For color studies, materials are always at

hand. The daily changing aspects of sky, earth and water present a shifting panorama of color for daily observation and expression. The nature products, birds and fowls, fishes and beasts of the field, our human kind, all plants and flowers and trees, everything of vegetable life, these furnish an inexhaustible resource for study; and for encouragement and stimulus we have all places where art has been and where art seeks to enter, all manufacture and design; so that when once we begin the study of color its possibilities stretch endlessly before us, and we are amazed at the extent of its uplifting forces.

Since these materials for study are always around us, the eye must be opened to see, the mind awakened to note, the hand made able to express; these three powers must be aroused,

called into action and trained to work in harmony. How shall we open the eyes to see color? Perhaps the mind's action must precede. If the eye sees and consciously recognizes a color and a color relation, that presupposes the action of the mind. Let us question the mind through the eye, and see what results we shall obtain. In this white page does any color or tint of color appear? The cover of this book will suggest an approach to color and between this and the dark of the type quite a change will be seen. The white page and the gray cover and the type will assume another appearance if turned away from the light. All the objects about us have some color and show changes in color varying with the light and shade cast upon them.

If we try to single out those objects which

have a tone or suggestion of red we shall find ourselves comparing these object colors with an image of red which exists in the mind. And probably this mental image of red will differ in different persons. So with yellow and green and other colors. We ought then to have an ultimate standard of color attainable by all and generally corresponding so that in comparing colors we shall be able to express their differences.

In the hues of the spectrum we have such a standard and our first business must be to form a mental image of the spectrum and the relations of the colors there existing. For instance, as soon as the image of standard red is formed in the mind it will be remarked that, while we may be surrounded by a multitude of red or reddish

objects, few of them are equal or at all similar to the intensity and purity of the standard.

Thus the mind begins the work of discrimination, continually comparing colors and their modifications, until a more or less definite image of color is formed.

From the first the aim of the teacher must be the formation and development of this mental image of color, which must include some knowledge of standard colors, some knowledge of the relation of colors, and some knowledge of the effect of light and shade on color. The mental image of color must take the place of the tuning fork in music, for, in tones of color, the scale of harmony has laws as imperative as the laws which govern harmonious sounds. Such an image must be formed with care, continually renewed

and referred to in daily practice. It thus becomes a safeguard against glaring and discordant combinations. Experience has proved this so conclusively that it does not seem possible to overrate its importance. The knowledge then of the teacher is based on the principles of color and color relations, and help for her must come, *not by solving all her problems but in showing her how to apply the principles of harmonious combinations.*

Our effort then will be, first, to know color so as to recognize its chief distinctions, and second, to find its true harmonious relations. If we can accomplish this, so as easily to find related hues and tones, we shall take away one of the most fruitful sources of irritation and annoyance, and substitute a rest and charm of spirit which

our teachers generally need. With the best will in the world it is impossible for teachers to preserve balance of temper and harmony of tone when colors scream discords from the wall.

Our ideas of the relation of color are gathered, first, from color combinations which contain the major hues, like the rainbow, soap bubbles, etc. These colors are of such intensity and purity that we call them standard colors, and from them we make all combinations of color. Placed in any other order they would not appear to have any relation to each other, they would be discordant, but in the order followed in the plate (Scale 1) they form a scale of related colors not discordant.

EXERCISES IN CONNECTION WITH SCALE 1.

Arrange the six standard colors in proper order making Scale 1. Vary shapes, using ob-

longs, triangles or semicircles overlapping.

Make group of reds, and select as standard a red free from violet or orange.

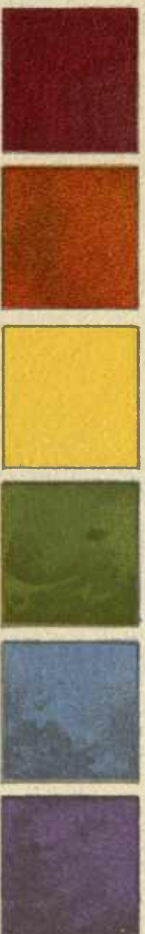
Make a study of blues, try to find standard blue with no trace of green or violet.

Collect yellow objects, discover which is the clearest yellow without orange or green in it.

If we separate these six colors of Scale 1 by pushing between each pair two intermediate hues made by blending or pulling one color into the next, we shall create a scale of hues, (Scale 2), which, being more closely related, will harmonize to a greater extent.

Form Scale 2 by leaving two spaces between each two of the standard colors and fill these spaces with modified hues. After red, *orange red*,

Scale 1.



Scale 2.



then *red orange*; after orange, *yellow orange*, then *orange yellow*, etc.

Thus in this scale the red color has been pulled a little into the orange, giving an orange red and the orange color has been pulled back toward the red, giving a red orange. In the same way the orange pulled out into the yellow becomes yellow orange and the yellow pulled into the orange becomes orange yellow.

The different hues thus formed constitute a scale of harmonious relation, a scale of hues, as they all differ in hue, which is one of the most important characteristics of color.

By hue we designate difference in *color* without regard to light or dark, a condition which is brought about by a variation in what the scientists call the wave length of the light rays.

If we take one of these hues as red and add white by laying a pale wash of red on white paper, we shall have a paler red, called a tint of red; a little black added to the red hue will produce a darker red, called a shade of red. Thus, with the original hue we shall have a scale of red showing three different tones passing from light to dark.

EXERCISES IN CONNECTION WITH THE TONE SCALES.

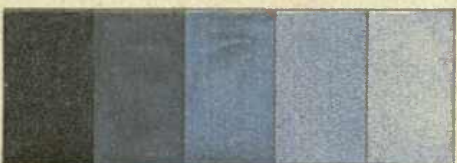
Try the effect of white on colors by making pale washes on white paper, thus producing *tints*.

Try the effect of black on different colors by adding a little black to a strong pure tone of color.

Notice the effect of a little black on a pale tone of color.

Make *tone scales* of different hues, showing a gradation from pale tints to deep shades.

Tone Scales.



Every object contains its own scale of tones, being paler on the light side, darker on the shaded side.

Make tone scales showing the color of a green apple, of a tomato, and a lemon.

Tones mixed with white or black lack purity. This is another important characteristic of color. A pure tone of color has neither black nor white in its composition. It is a pure hue. White added to various hues of the scale will affect them quite differently. In practice, instead of white, it will be just as well to use pale washes of color on white paper. Black, also, modifies color greatly, seeming to change the hue more than would be at first supposed. Notice these things in the printed scale and experiment with colors for proof. Using

the six standard colors, make different scales of hues, and scales of tones by adding black and white to these hues. A color scale combining the six standard colors and intermediate hues, each running up toward white, forming tints, and down toward black, forming shades, can easily be made and will form a keyboard of great aid in studying harmonious combinations. (See Scale of Hues.)

Each of these hues taken with its paler and darker tones forms a *tone scale* of that hue; a. a., b. b., c. c. are tone scales of violet red, red and orange red.

The teacher should have sufficient knowledge to develop such a scale as this, but pupils should be asked to make a limited scale at first. They should be taught by constantly varying exercises, conducted in a pleasing fashion, to see and express

SCALE OF HUES.

KEYBOARD FOR DEVELOPING COLOR HARMONIES.

Tint 2. Tint 1.

Shade 1. Shade 2.

Violet Red. a					a	} Group of Reds.
Red. b					b	
Orange Red. c					c	
Red Orange.						} Group of Oranges.
Orange.						
Yellow Orange.						
Orange Yellow.						} Group of Yellows.
Yellow.						
Green Yellow.						
Yellow Green.						} Group of Greens.
Green.						
Blue Green.						
Green Blue.						} Group of Blues.
Blue.						
Violet Blue.						
Blue Violet.						} Group of Violets.
Violet.						
Red Violet.						

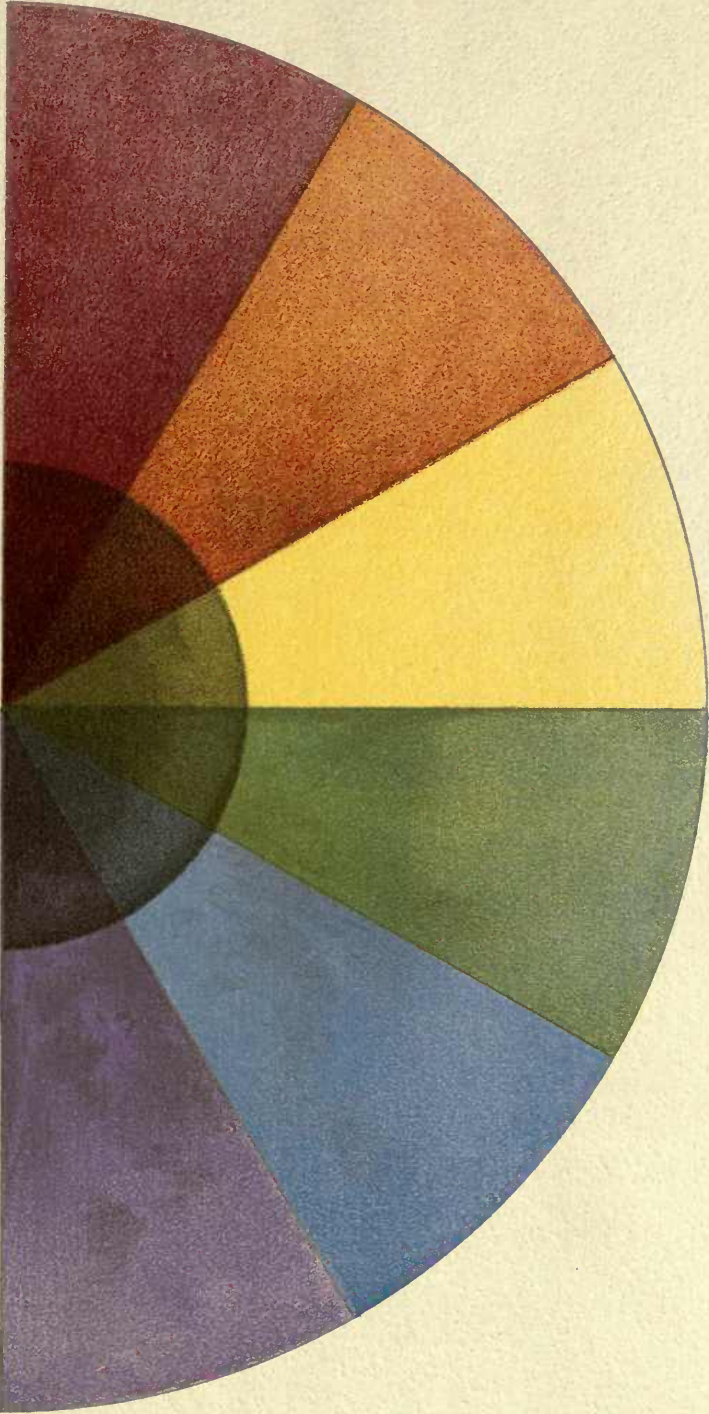


varying hues and tones of color. Teaching the scale of color with the persistence used in teaching the scale of music, will develop keenness of sight in both hue and tone. If the mind of the child is impressed with the true order or relation of color, he will instinctively place colors in that order and seek for harmony in their adjustment. (PLATE IV.) This is no more difficult than teaching arithmetic, and it is quite as necessary in developing the subject as teaching the order of numbers and their operations.

COLOR SCALING.

We have found two things to be necessary, first, a color standard to which we may refer doubtful colors and by means of which we may express distinctions and variations of color; second, the harmonious relations of these standard colors and their combination in a scale to furnish us with a keyboard of color harmony.

The next step must be that of actually finding the color of our surroundings. If we are to attain to any broad development of the color sense, it must be through its constant exercise in applying the color-thought to all objects in the range of our vision. When close connection has been



established between this color-thought and the mental image of the scale, the color of an object will seem at once to take its right place in the scale.

When this can be done, it is as if the mind is illumined, colors and their harmonic relations are then more quickly observed and appreciated and therefore more easily expressed. For instance, we are more or less surrounded by the sky, and most of us have glimpses of it during the day, but until the systematic study of its color is begun few find themselves able to express any of its relations to the earth. Thoughtful attempts to express its color will bring to the mind a much keener appreciation of its beauties.

In looking at the sky we observe that it possesses an intense luminosity which is lacking in

the colors of our keyboard. This is the dominant and characteristic quality of the sky. It is as if light were shining through all its hues and tones.

The appearance of the earth tones in relation to those of the sky, is greatly darker. No matter how light or bright the earth colors may be, they are darker than those of the sky which reflects its light upon them. Therefore, in expressing the colors of the earth in relation to the sky, their comparative darkness must be considered and expressed. (PLATE v.) As we have not *light* to paint with, this will often force us into the transposition of the scale to a much lower key. In general the solving of many problems will be found in this lowering of earth tones so as to secure luminosity of sky.

Looking thus at the sky and noting the



light quality of all its tones, as of light shining through opaque glass, we find in it all the hues, and all the paler tones of our keyboard with an infinite number of intermediate hues, softly blending. And we find that the secret of much of its loveliness is in the same harmonic relation as that of the spectrum and our keyboard. Each sunrise and sunset shows blue changing into violet, violet advancing into red, passing through orange and yellow into green and back into blue. Even the gorgeous yellow sunsets glow upward through faint orange and red into the changing violet which leads to the blue beyond. (PLATE VI.)

The earth too, which lies about us often unnoticed and unstudied, its colors pitched in a lower key, finds a changing pathway in the same relative scale. Far off on the horizon it meets the

lower sky with a soft violet tint, adding soft blue and grayer green which, nearer, show more of yellow and red brown at our feet, so that every green field and meadow spreads out the scale with an infinite gradation.

The varying color of each green tree gives a living tone scale of its own prevailing hue which later changes in ever increasing brilliancy. When leaves have fallen and frost has whitened all the color, the fields and woods form an exquisite harmony of broken orange against the gray violet blues and reds of distant leafless trees.

Even city streets with vanishing lines show soft fading violet tones against the sky. We never realize *how* soft and beautiful are these tones until we see them as background against



the jutting angle of a nearer building.

Coming down to near objects each will be found to possess a tone scale of its own, varying with the light and dark which it receives. Compared with the color scale, few objects will show the great brilliancy of pure standard color.

In looking at an object to see where its color belongs in the scale, look first for the most brilliant hue of its general surface. Note how this hue varies, becoming paler on the light side, darker in the shade; decide where the hue would be found in the scale, then trace it up in the line of tints, down in the line of shades. (PLATE VII.)

Do not copy the plate, but arrange with a brush and color a tone scale of orange, then try to express an orange so as to give the effect

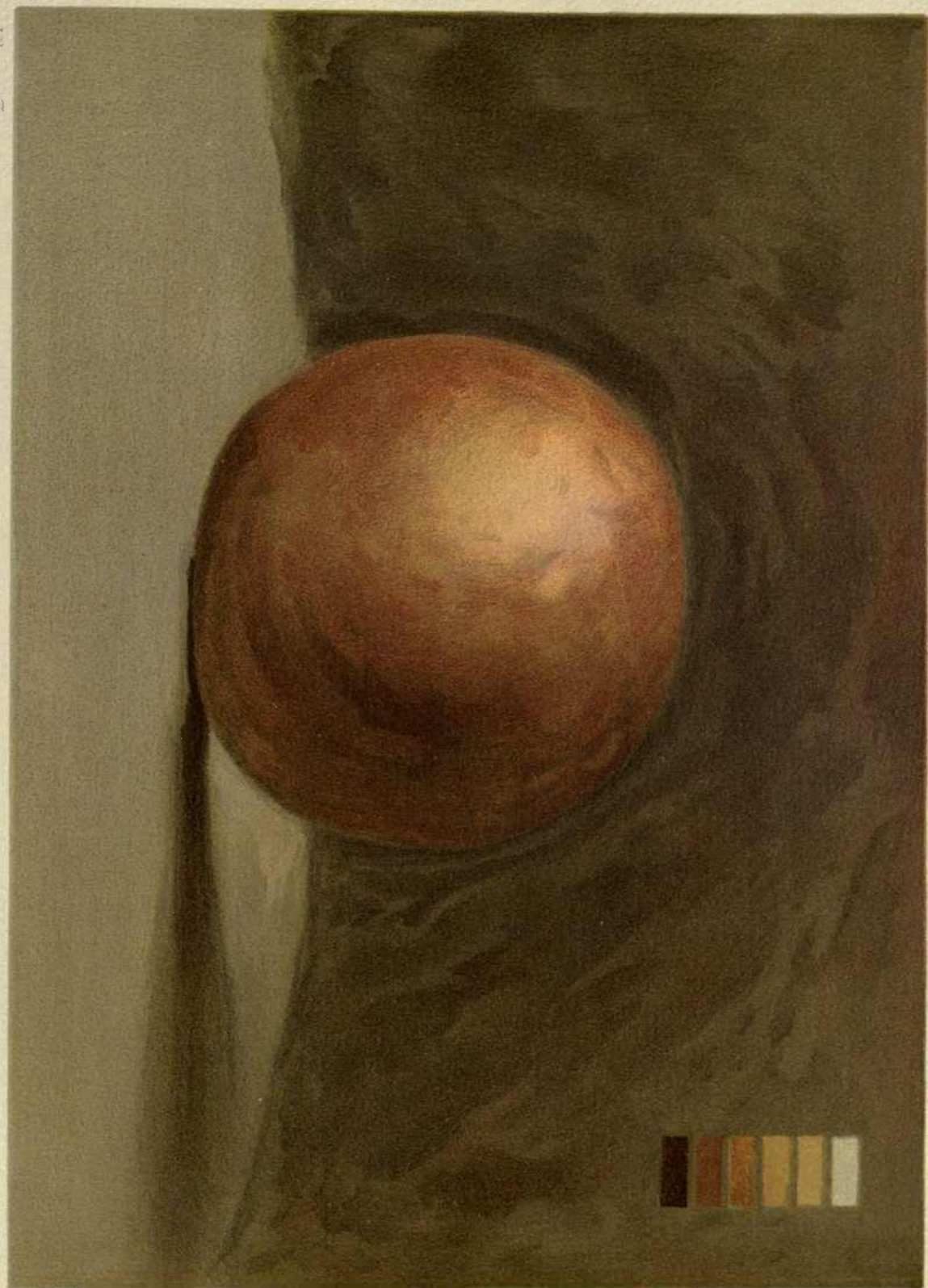
of light and shade and roundness. Note the extreme darkness of the point of contact in shadow and the rich warmth of shade and shadow.

For another exercise, cut an orange in halves and scale the color seen before trying to paint.

By degrees, this analysis of the color of objects will give power in determining color tones.

The study of objects, comparing with the scale, should always precede painting, that the child may have in mind a clear idea or image of the color he will attempt to produce. The whole class should take part in this analysis, telling where in the scale the color of the object belongs.

Fruit, flowers, leaves and some textiles

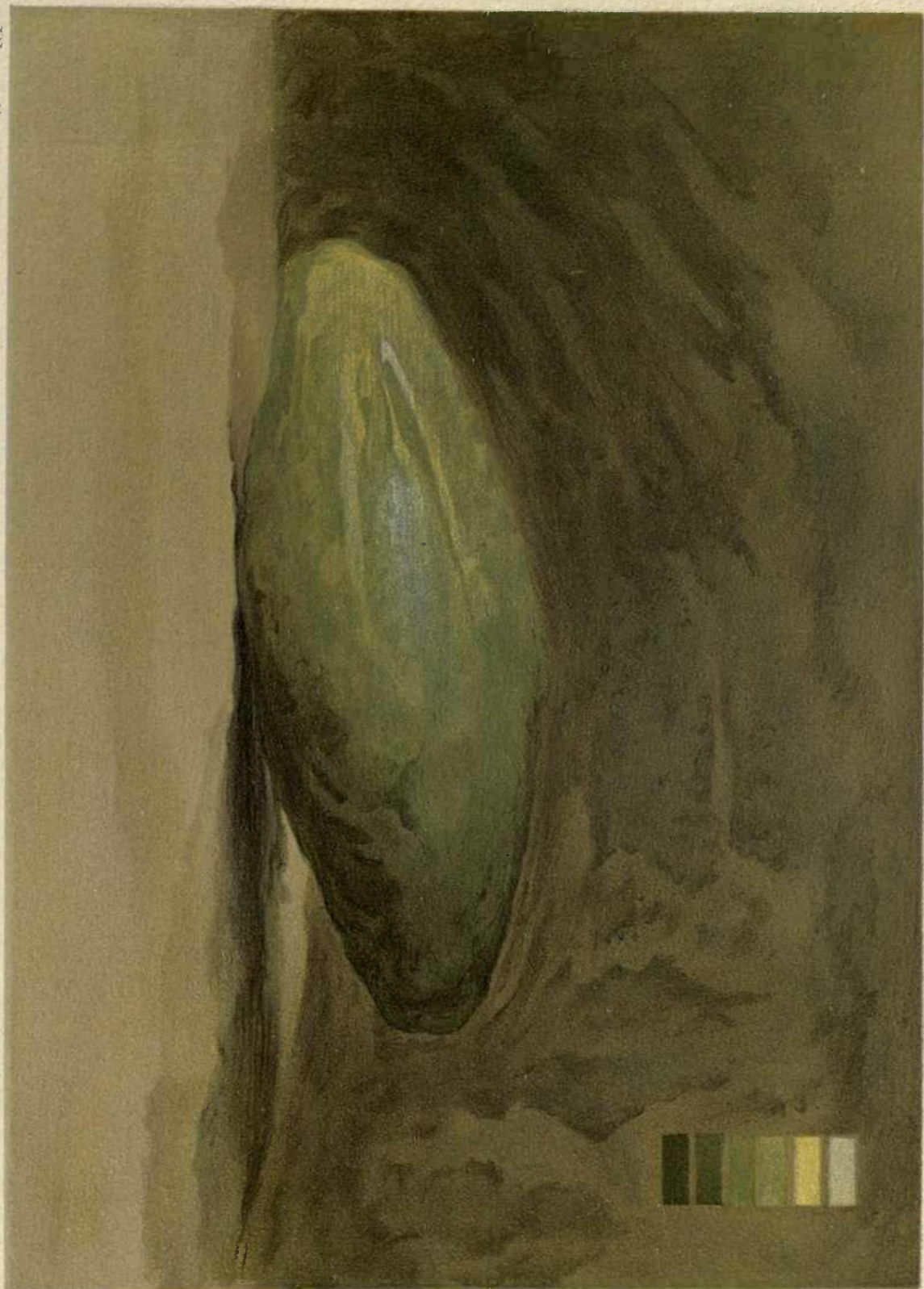


will afford variety and interest. The child's knowledge of color built up on a logical foundation will aid greatly in expressing the colors seen. Gradually the teacher will find that this close and constant study of the scale in comparison with objects will clear the difficulties in her own mind, and put her in possession of that strong mental image which she is laboring to create in her pupils.

Thus this color thought must enter into daily life, finding exercise and development in all surroundings. What it *can* do to our great uplifting I will quote from a master pen whose "Nature for its Own Sake" is next to the inspiration of the dawn itself. (This book by Prof. Van Dyke should be like precious gold to every teacher.)

"I have seen ordinary marsh flags with a low summer sun behind them, when every blade looked as transparent as cathedral glass, and every leaf-edge was showing the colors of the spectrum. And again under the morning sun, with the wind blowing over them, I have seen them glitter and throw light from their polished surfaces like the bayonets of a regiment on parade. And still again in midwinter, I have seen these same commonplace flags standing yellow as gold above the snows, with every stem casting a bright blue shadow, and the whole scene of marsh, sky and snow showing a perfect color-harmony in yellow, blue and white."

Even in so green an object as the cucumber we find no pure spectral green. (PLATE VIII.) The light tones are modified by other hues, the



shades are changed by darkening, other colors are reflected in the surface and background, so that only broken greens exist, and they are much more beautiful than a flat tone of pure color would be.

Try to scale the colors seen in a green leaf, or a green apple, putting notes or dabs of color side by side as in the plate, making a scale of the hues seen in the leaf, or of the tones seen in the apple. Notice that the effect of shade on the dark side of the apple must be produced by the addition of black, not intensifying the green, but darkening it.

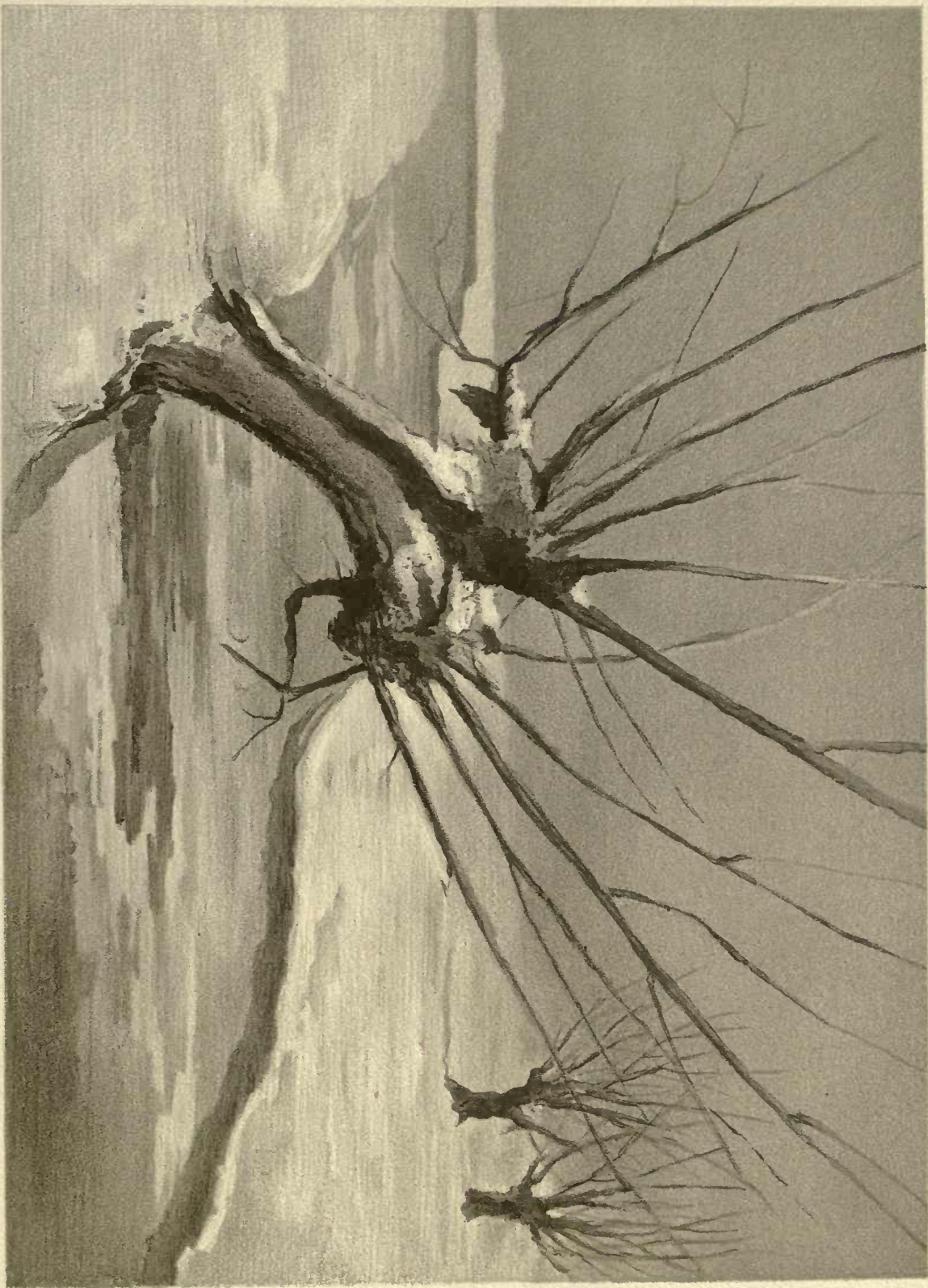
MASS DRAWING WITH BRUSH.

Mass drawing is expressing the whole of an object or group, excluding details. Pedagogically it should precede line drawing. First, because the child sees mass, not outline. Second, because mass, not outline, is the important fact. It is the mass of brilliant color in an orange or apple which makes it attractive to the child, and it is that which he longs to express. To require the child to express a bright colored object by a black or gray outline is to disappoint and defraud him, finally to destroy his confidence in the teacher. With the color should be given a facile medium.

Why should we give the little children always the hardest and crudest medium? The brush is the simplest and most educational medium because it lends itself most naturally to the movement of the hand. It is thus the most facile means of expressing thought and its results are clean and attractive.

"I cannot learn color." "I never could do anything with a brush." These expressions and the thoughts they typify belong to the past, they are effete. For the sake of our children and their progressive needs, the brush and color must be taught and used by all advancing teachers. With a thought of necessity and the *will behind it*, brush expression is available for all, but it must be undertaken without the hampering fear-thought.

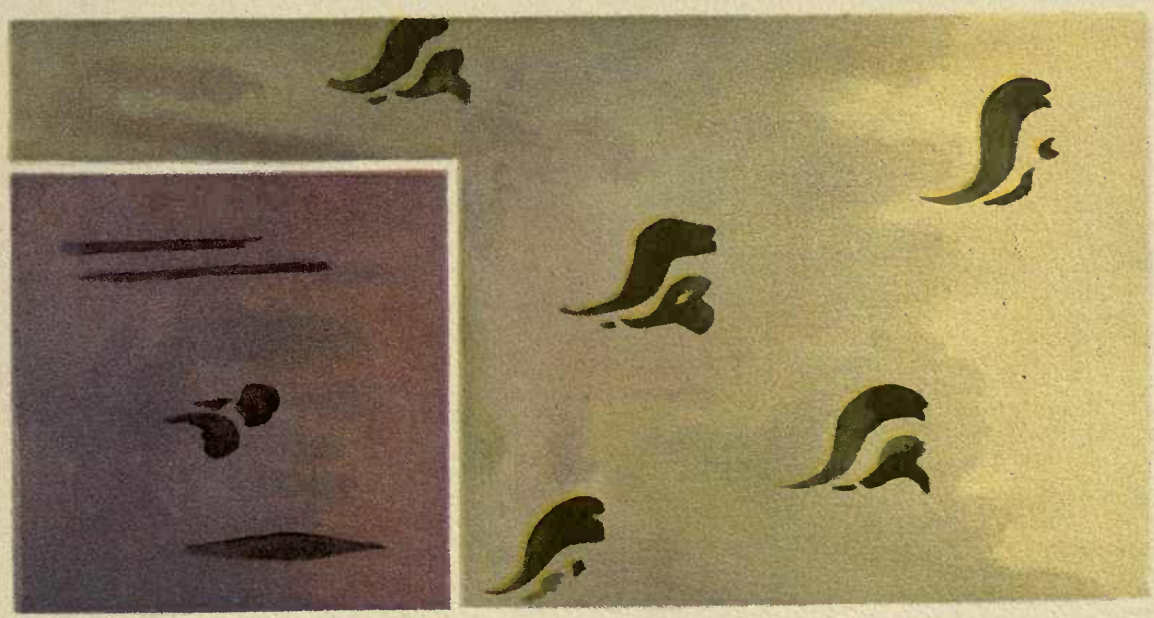
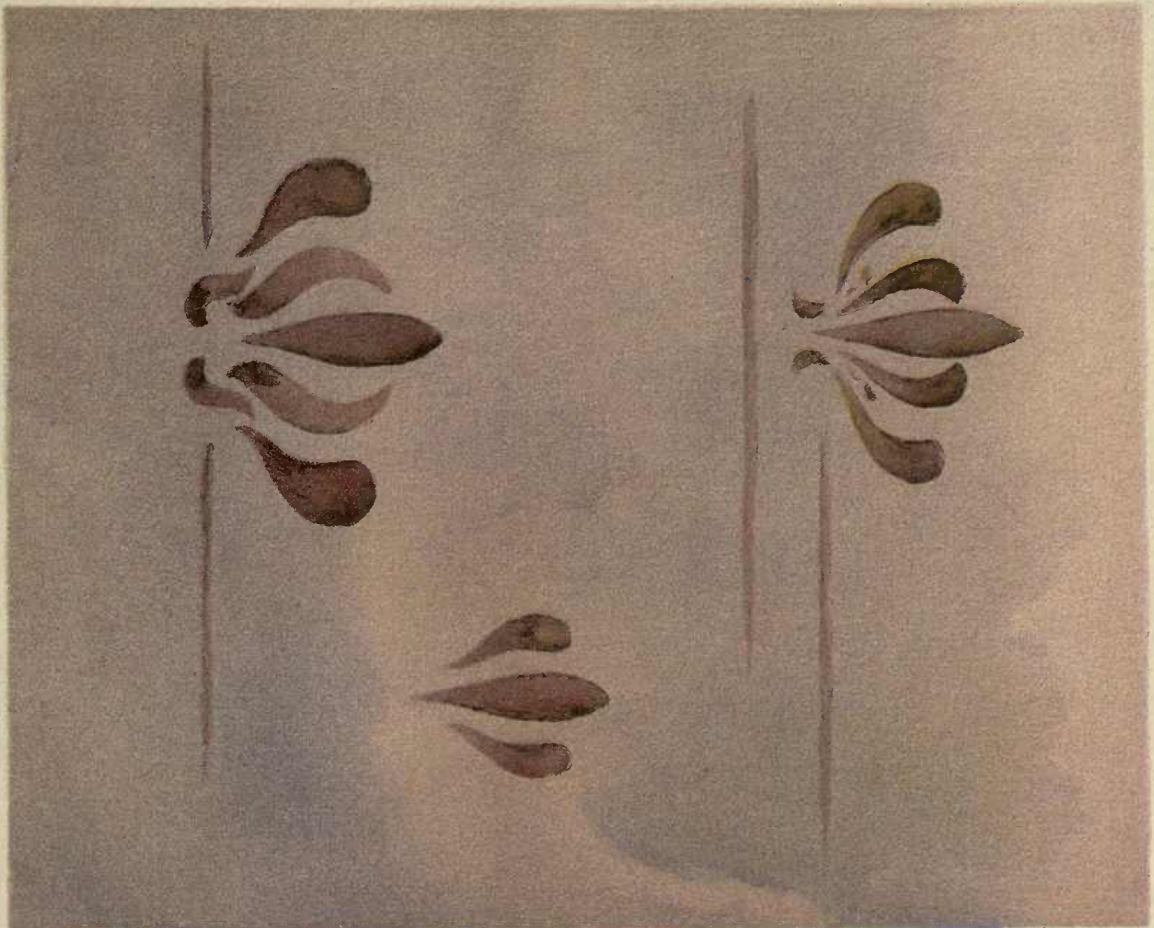
A brush resembles a horse; to get any good service out of it, you must be its master. If you allow fear to get the better of you, the instrument will be useless in your hand. If you determine you will no longer postpone your attempt, get a soft brush, Chinese or Japanese is best, dip in water, then in any color (ink will do), try to imitate blades of grass, simple leaves held in the hand, a spray of larch or pine, a leafless tree trunk and branch, giving, not the outline alone, but the whole mass with as few strokes of the brush as may be. (PLATE IX.) Practice drawing all sorts of things in mass, and to get facility with the brush, try with pale ink, a brush full in a little water, to lay a flat wash, holding the paper slightly tipped so that the liquid will flow



toward the lower part, where superfluous color can be blotted out with soft paper or rag.

The employment of one color in different tones is adapted to the representation of grasses (green or brown,) some leaves and seed vessels, even a few fruits and vegetables, the trunk and branches of leafless trees and simple landscape effects. Painting in one color varying by light and dark tones makes what is called a monochrome. If the tones are carefully arranged, balancing light and dark agreeably, the resulting work will be a dominant harmony. Very beautiful effects are thus made by using one color in varying tints and shades. These illustrate the beauty and effect of contrast; each tone helps the other. This is the principle of *helpful contrast*.

It will be recognized by the teacher that it is necessary, in order to produce the required facility in the handling and analysis of color tones, for the children to have some systematic work apart from the objects which require relief, light and shade, and other elements which complicate the color treatment. In other words, some simple exercises will be necessary with most children, by which the color sense in its harmonious relations may be developed. For this, the work of the brush is admirable adapted, and in fact in most of the states in which the color work has been successfully attempted, brush work has taken the lead. For this the Japanese brush is commended because its flexible character gives facility to the work. Starting with the simple use of the brush, and



one or two tones of black, ink if necessary, much can be done toward developing the ideas of balance, contrast and proportion. Of two washes of ink, a greater harmony will be obtained by considerable difference in the value or intensity of the tone. To obtain balance, a larger extent of the pale tone will contrast with the smaller and darker element. These studies can be carried on with spot design for unit or repeat or surface covering, and the children gradually trained to see that harmony is secured as much by the *relative quantity* of tones in a composition as in the selection of the tone. (PLATE X.) An object drawn with a brush may be beautiful or not, according as the relative quantity of dark is balanced by the mass of half tone and light. One of

the most important principles of harmony is that of helpful contrast. We can see that in the scale by the effect of one hue with another, so in this first work with simple tones of black or of ink, value is given to the low flat tone, by the addition of a stronger and smaller element of dark. A simple flat wash will seem to contain no element of beauty until contrasted with a smaller and darker part. All these washes of color should be put on with decision. The child must know exactly what he is to do before he does it. There must be no uncertainty, no muddling. With the modern method of brush-work, there must be no little, finicky work. The mind must not even be on the brush. The whole purpose must be the expression of that image which is in the mind

of the child. It may appear that I am laying special stress on this idea of the mental image, but I have seen so much miserable and halting work resulting from vague conception of what is to be done, that I feel obliged to emphasize this point in speaking to teachers.

Ability to express color must come through two channels; the eye must be saturated with the color, so that the mind is *charged*, or filled with the idea to be expressed, and the hand must continually execute in color mediums, for, just as in language, *facility* implies *use*, so the ability to think in color terms implies effort to express in color medium.

The *motif* for this work must be recognized by the teacher, not that pupils shall be able to execute pretty little pieces, but that they may

learn to express graphically all the changing nature about them. Therefore the main effort of the teacher should be directed, not to the execution, but to the expression of thought. Where the effort is placed on execution, the drawings are conscious and stilted, the result dull and uninteresting. If the main effort of the teacher is to *hold hard* in expressing the thought which nature study has awakened, drawings may lack the "show" quality, but will contain (what is vastly more important) life, interest and gradually advancing power of expression.

PRACTICAL SUGGESTIONS.

Form a hue scale of the colors of a mullein plant, leaf, flower and stalk. Will these hues be found in light or dark tones?

Find a leaf which has several colors, and



Plate 11

one which shows different tones of the same color.

Find a leaf whose sides differ in color.

How about the grape, buttonwood and willow?

Scale the color in a stalk of celery.

What colors have you seen in the stalks of rose and blackberry bushes?

Make leaf and flower studies in two tones of one color on gray paper. (PLATE XI.) A small amount of dark color will harmonize with or balance a large amount of pale tone.

In using gray or colored papers for brush work the tint of the paper should be made to go as far as possible and the darker tone of color used mainly for accent. The cartridge papers in dull gray green, red gray and brown gold may be effectively used with red and brown tones for all sorts of tree studies, foliage, trunk

and branches, also for animal and pose drawing. Make a tone scale of your favorite color, and show how it is related to other hues.

Are ripe oranges always the same color?

Where in the scale would you expect to find the color of a potato? How does the color of a pepper or a tomato differ from standard green?

What are the color changes in strawberry leaves? Scale the colors in a brilliant leaf and then show the brown tones of the same leaf when faded and dry. Draw all sorts of pods, seed vessels and dry flower stalks, using two tones of brown.

Some of these studies can be made as designs for a door panel or window casing, and should then be drawn boldly with a large brush, lining in with a darker tone to give decorative

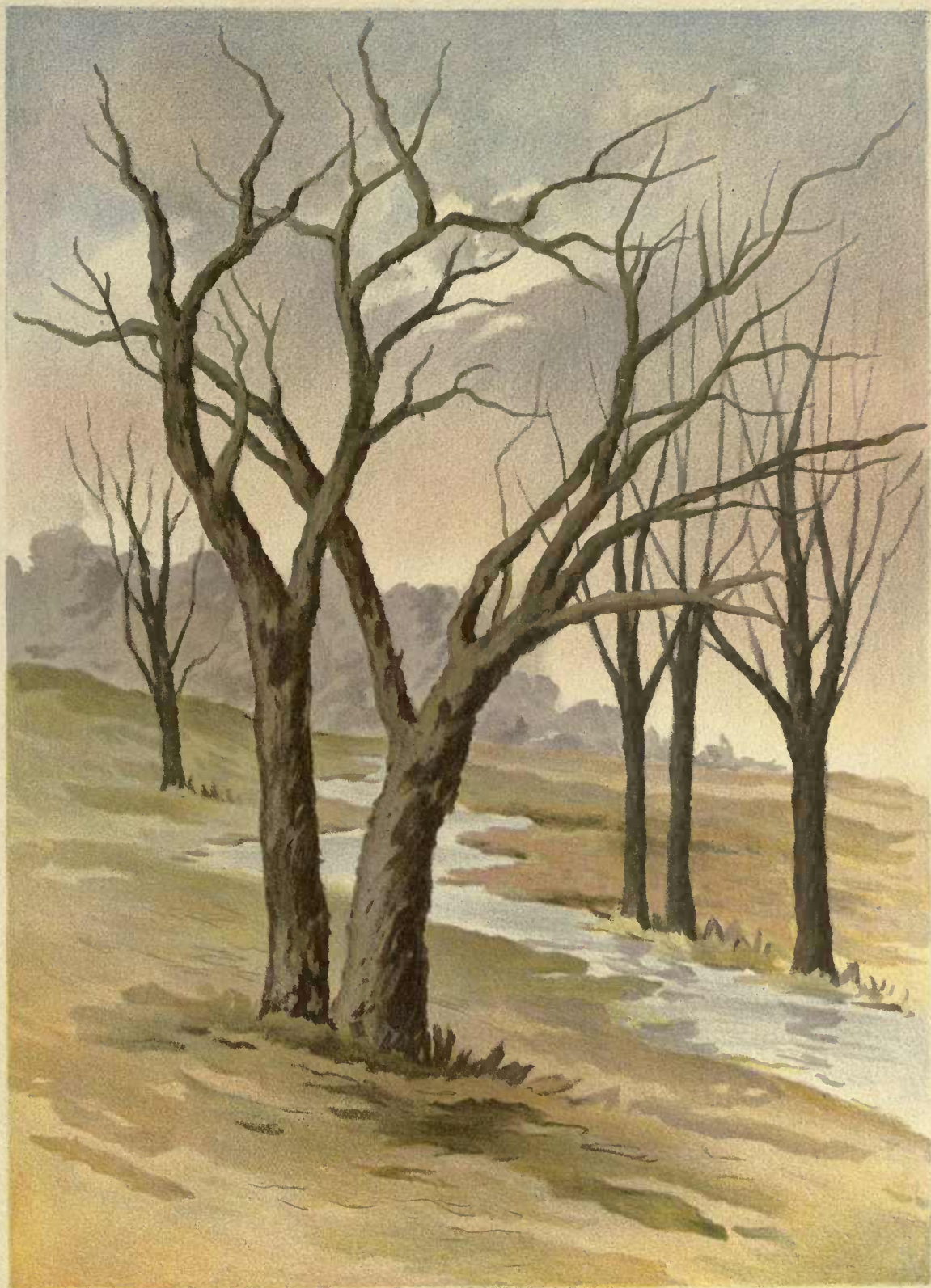


Plate 12

effect. Mullein stalks, cat-tails, tall grasses and reeds are adapted to this work. Paint in broad flat washes, leaving the tints pure and even.

Paint from the root and leaves of a growing beet and notice the complementary color. In painting vegetables and fruit an effect of light and shade can be obtained by softly dabbing out the color on the light side, while still wet, and adding a little dark to the shade side, allowing the color to settle or puddle while drying.

Draw leafless trees with the brush, noticing how the branches widen and thicken where they join the trunk. (PLATE XII.) Pressing more strongly on the brush will often give this effect. Express as much as possible with a single stroke. Develop the mental image of trees by constantly endeavoring to express with the brush

from memory, forms of trees seen during a walk, or on the way to school.

Show by brush sketches how trees vary in shape and branching, as a poplar and an elm, or an apple tree. Show how the foliage in mass of a maple tree differs from that of an evergreen or Christmas tree.

Does the green of spruce or hemlock differ in hue from that of a poplar? What is the color of the trunk of a peach tree? What is the color of the earth; edges of fields and roads in your neighborhood?

How do sunrise and sunset colors differ?

Are distant buildings as strong in color or in light and shade as near ones? Paint a landscape in three tones. What part will appear lightest?

